Serban M. Costea   **Curriculum Vitae**

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Department of Mathematics and Computer Science
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Personal Information
Place of birth: Timisoara, Romania
Citizenship: Romanian
Language proficiency: Romanian, English, Italian, French, Serbian.

Academic Education and Degrees:

August 2006	Ph.D. University of Michigan, Ann Arbor, Mathematics.
	Thesis Advisor: Juha Heinonen (deceased in 2007).
	Thesis Title: *Strong A_∞-weights and scaling invariant Besov and Sobolev-Lorentz capacities.*
June 2001	M.S. Ohio State University, Columbus, Ohio, Mathematics.
	Advisor: Bogdan Baishanski (deceased in 2010).
June 1998	M.S. West University of Timisoara, Romania, Mathematics.
June 1997	B.S. West University of Timisoara, Romania, Mathematics.

Employment:

2013 –	**Associate Professor** (permanent position), University of Pitesti, Romania, starting date October 1, 2013 (on leave between March 16, 2015-December 31, 2016).
2016	**Research Fellow**, University of Pisa, January 1-December 31, 2016.
2015	**Research Fellow**, University of Trento, March 16-December 31, 2015.
2013 – 2014	**Researcher**, Institute of Mathematics of the Romanian Academy, Bucharest, June 1, 2013-November 30, 2014.
2012 – 2013	**Postdoctoral Fellow**, Institute of Mathematics of the Romanian Academy, Bucharest, August 1, 2012-January 31, 2013.
2010 – 2012	**Postdoctoral Researcher**, École Polytechnique Fédérale de Lausanne, September 1, 2010-July 31, 2012.
2008 – 2010	**McKay Postdoctoral Fellow**, McMaster University, January 1, 2008-June 30, 2010.
2007	**Postdoctoral Researcher**, Helsinki University of Technology, September 1-December 31, 2007.
2006 – 2007	**Postdoctoral Researcher**, University of Helsinki, September 1, 2006-August 31, 2007.

Research Grants:

2008 – 2010	**NSERC Grant** no. 5149, July 1, 2008-June 30, 2010 (team member)-Director Eric T. Sawyer. Amount 10000 CAD.
2013 – 2014	**Grant CNCS IDEI** nr. PN-II-ID-PCE-2011-3-0383, June 1, 2013-November 30, 2014 (team member)-Director Laurentiu Leustean.

Research experience:

2011	Fall Semester at the Institute of Mathematics of the Romanian Academy, Bucharest.
2008	Visiting scholar at the Fields Institute, Toronto, January 1-June 30.
2003	Fall Semester at the University of Jyväskylä.

Professional Activities: referee for Journal of Functional Analysis, Advances in Calculus of Variations, Indiana University Mathematics Journal, Potential Analysis, Monatshefte für Mathematik, Revista Matematica Iberoamericana, Revista Matematica Complutense and Annales Academiae Scientiarum Fennicae Mathematica

Research Interests: Analysis on Metric Measure Spaces, Nonlinear Potential Theory, Geometric Function Theory and Operator Function Theory

Fellowships and Research Assistantships:

2006	**Allen L. Shields Memorial Fellowship**, University of Michigan, Winter 2006.
2005	**Graduate Student Research Assistantship**, University of Michigan, Winter 2005.
2004	**Graduate Student Research Assistantship**, University of Michigan, May 1-August 31, 2004.
2003	**Graduate Student Research Assistantship**, University of Michigan, May 1-August 31, 2003 and Fall 2003.
1996	**Fellowship at the Perugia Summer School in Mathematics**, University of Perugia, Italy, July 29-August 30, 1996.

Talks:

2021	Jun	Harmonic Analysis and Partial Differential Equations (MS - ID 28), Portorož, Slovenia, June 21-23, 2021 (online).
2019	Oct	Ergodic Theory and Related Fields, Institute of Mathematics of the Romanian Academy, Bucharest, Romania, October 7-11, 2019.
	Jun	The 9th Congress of Romanian Mathematicians, Galati, Romania, June 28-July 3, 2019.
2018	Jul	27th International Conference on Operator Theory, West University of Timisoara, Romania, July 2-6, 2018.
	May	8th Workshop for Young Researchers in Mathematics, Institute of Mathematics of the Romanian Academy, Bucharest, Romania, May 17-18, 2018.
2017	Jun	10th School in Analysis and Geometry on Metric Spaces, Levico Terme, Italy, June 26-30, 2017.
2016	Dec	Conference on the occasion of the 75th birthday of Olli Martio, University of Jyväskylä, Finland, December 15-17, 2016.
	Jun	26th International Conference on Operator Theory, West University of Timisoara, Romania, June 27-July 2, 2016.
	Jun	University of Pisa, Calculus of Variations Seminar.
	Feb	University of Pisa, Calculus of Variations Seminar.
2015	Dec	University of Trento, Calculus of Variations and Geometric Measure Theory Seminar.
	May	University of Trento, Calculus of Variations and Geometric Measure Theory Seminar.
2012	Oct	PDE and Stochastic Processes, The 5th Workshop Series on Mathematics, University of Pitesti, Romania, October 12-14, 2012.
	Jun	The XIII Romanian-Finnish seminar, Ploiesti, Romania, June 26-30, 2012.

2011	Oct	Institute of Mathematics of the Romanian Academy, Bucharest, Romania, Potential Theory Seminar.
	Jun	The 7th Congress of Romanian Mathematicians, Brasov, Romania, June 29-July 4, 2011.
	Jun	7th School in Analysis and Geometry on Metric Spaces, Levico Terme, Italy, June 20-24, 2011.
	May	Séminaire d'Analyse Géométrique, École Polytechnique Fédérale de Lausanne, Switzerland.
2010	Dec	University of Bielefeld, Bielefeld, Germany, Geometric Analysis Seminar.
	Nov	University of Ferrara, Ferrara, Italy, Analysis Seminar.
	Aug	Summer School in Analysis, Le Touquet, France, August 30-September 3, 2010.
	Jun	23rd International Conference on Operator Theory, West University of Timisoara, Romania, June 29-July 4, 2010.
	Jun	Harmonic Analysis: A Retrospective Workshop, Fields Institute, Toronto, May 31-June 4, 2010.
	Mar	The 26th Southeastern Analysis Meeting, Georgia Tech, Atlanta, March 25-28, 2010.
	Mar	University of Alabama, Tuscaloosa, Colloquium.
	Feb	University of Waterloo, Waterloo, Canada, Analysis Seminar.
2009	Dec	The CMS Winter Meeting, University of Windsor, Windsor, Canada December 5-7, 2009.
	Nov	The Concordia-McGill Analysis Seminar, Montreal, Canada.
	Nov	Séminaire d'Analyse, Laval University, Quebec City, Canada.
2008	Nov	The 8th Prairie Analysis Seminar, University of Kansas, Lawrence, November 7-8, 2008.
	Nov	Kansas State University, Manhattan, Function Theory Study Seminar.
	Aug	Workshop on Function spaces, Differential Operators and Nonlinear Analysis, Helsinki, Finland, August 22-24, 2008.
	Aug	The XI Romanian-Finnish seminar, Alba Iulia, Romania, August 14-19, 2008.
	May	Quasiconformal Mappings and Analysis on Metric Spaces, a conference in memory of Juha Heinonen; University of Michigan, Ann Arbor, May 12-16, 2008.
	May	University of Cincinnati, Geometric Analysis Seminar.
	Feb	Fields Institute, Toronto, Working and Research Seminars.
2007	Nov	University of Helsinki, Geometric Analysis Seminar.
	Oct	Helsinki University of Technology, Espoo, Finland, Study Seminar in Analysis.
	Mar	Helsinki University of Technology, Espoo, Finland, Study Seminar in Analysis.
	Mar	University of Helsinki, Seminar in Functional Analysis.
2006	Nov	University of Oulu, Oulu, Finland, Analysis Seminar.
	Oct	Helsinki University of Technology, Espoo, Finland, Study Seminar in Analysis.
	Sep	University of Helsinki, Geometric Analysis Seminar.
	Sep	Geometric Analysis and PDE, Naples, Italy, September 1-4, 2006.
	Jun	Analysis and Partial Differential Equations, Bedlewo, Poland, June 19-23, 2006.
	May	University of Cincinnati, Geometric Analysis Seminar.
	Apr	University of Pittsburgh, Analysis Seminar.
	Jan	University of Michigan, Ann Arbor, Analysis Study Seminar.
2005	Aug	The X Romanian-Finnish Seminar, Cluj-Napoca, Romania, August 14-19, 2005.
	Mar	Conference on Minimal Surfaces, Subelliptic PDE's and Geometric Analysis, Dartmouth College, Hanover, March 9-12, 2005.
	Jan	University of Michigan, Ann Arbor, Geometric Function Theory Seminar.

Conferences attended:

2022	Jun	28th International Conference on Operator Theory, West University of Timisoara, Romania, June 27-July 1, 2022.
	May	XXXI Meeting on Calculus of Variations, Levico Terme, Italy, May 9-13, 2022 (online).
2021	Nov	The 17th Prairie Analysis Seminar, Kansas State University, Manhattan, November 5-6, 2021 (online).
	Oct	Conference in honor of Rajchman, Zygmund and Marcinkiewicz, October 18-23, 2021, IMPAN Warsaw, Poland (online).
	Jun	8th European Congress of Mathematicians, Portorož, Slovenia, June 20-26, 2021 (online).
	Jun	Contemporary Analysis and its Applications, Portorož, Slovenia, June 16-18, 2021 (online).
2020	Feb	XXX Meeting on Calculus of Variations, Levico Terme, Italy, February 3-7, 2020.
	Jan	Calculus of Variations. An international conference to celebrate Gianni Dal Maso's 65th birthday, SISSA Trieste, Italy, January 27-February 1, 2020.
2019	Oct	Ergodic Theory and Related Fields, Institute of Mathematics of the Romanian Academy, Bucharest, Romania, October 7-11, 2019.
	Jun	The 9th Congress of Romanian Mathematicians, Galati, Romania, June 28-July 3, 2019.
	Jun	11th School in Analysis and Geometry on Metric Spaces, Levico Terme, Italy, June 24-28, 2019.
	Jun	Nonlinear Averaging and PDEs. On the occasion of the 60th Birthday of Juan J. Manfredi, Levico Terme, Italy, June 19-22, 2019.
	Feb	XXIX Meeting on Calculus of Variations, Levico Terme, Italy, February 4-8, 2019.
2018	Jul	27th International Conference on Operator Theory, West University of Timisoara, Romania, July 2-6, 2018.
	May	8th Workshop for Young Researchers in Mathematics, Institute of Mathematics of the Romanian Academy, Bucharest, Romania, May 17-18, 2018.
	Feb	XXVIII Meeting on Calculus of Variations, Levico Terme, Italy, February 12-16, 2018.
2017	Jun	10th School in Analysis and Geometry on Metric Spaces, Levico Terme, Italy, June 26-30, 2017.
	Feb	XXVII Meeting on Calculus of Variations, Levico Terme, Italy, February 6-10, 2017.
2016	Dec	Conference on the occasion of the 75th birthday of Olli Martio, University of Jyväskylä, Finland, December 15-17, 2016.
	Nov	Optimal Transportation and Applications, Scuola Normale Superiore Pisa, November 7-11, 2016.
	Sep	A Mathematical Tribute to Ennio de Giorgi, Scuola Normale Superiore Pisa, September 19-23, 2016.
	Jun	26th International Conference on Operator Theory, West University of Timisoara, Romania, June 27-July 2, 2016.
	Jun	Singular Phenomena and Singular Geometries, University of Pisa, June 20-23, 2016.
	Feb	Mini-workshop Variational and PDE problems in Applied Mathematics, University of Pisa, February 10-12, 2016.
	Jan	XXVI Meeting on Calculus of Variations, Levico Terme, Italy, January 18-22, 2016.
2015	Jul	9th School in Analysis and Geometry on Metric Spaces, Levico Terme, Italy, July 6-10, 2015.
	Jun	The 8th Congress of Romanian Mathematicians, Iasi, Romania, June 26-July 1, 2015.
2014	Jun	25th International Conference on Operator Theory, West University of Timisoara, Romania, June 30-July 5, 2014.
	Jun	8th School in Analysis and Geometry on Metric Spaces, Levico Terme, Italy, June 15-20, 2014.
	Jan	XXIV Meeting on Calculus of Variations, Levico Terme, Italy, January 27-31, 2014.

2012	Oct	PDE and Stochastic Processes, The 5th Workshop Series on Mathematics, University of Pitesti, Romania, October 12-14, 2012.
	Jul	24th International Conference on Operator Theory, West University of Timisoara, Romania, July 2-7, 2012.
	Jun	The XIII Romanian-Finnish seminar, Ploiesti, Romania, June 26-30, 2012.
	May	ERC Summer School on Analysis and Geometry in Metric Measure Spaces, Scuola Normale Superiore Pisa, Italy, May 7-11, 2012.
	Feb	XXII Meeting on Calculus of Variations, Levico Terme, Italy, February 6-10, 2012.
2011	Jun	The 7th Congress of Romanian Mathematicians, Brasov, Romania, June 29-July 4, 2011.
	Jun	7th School in Analysis and Geometry on Metric Spaces, Levico Terme, Italy, June 20-24, 2011.
2010	Dec	Parole aux jeunes chercheurs du réseau Platon, Fourier Institute, Grenoble, France, December 9-10, 2010.
	Aug	Summer School in Analysis, Le Touquet, France, August 30-September 3, 2010.
	Jun	23rd International Conference on Operator Theory, West University of Timisoara, Romania, June 29-July 4, 2010.
	Jun	Harmonic Analysis and Applications, University of Seville, Seville, Spain, June 14-18, 2010.
	Jun	Harmonic Analysis: A Retrospective Workshop, Fields Institute, Toronto, May 31-June 4, 2010.
	May	Conference on Complex Analysis, University of Illinois at Urbana-Champaign, Urbana, May 21-23, 2010.
	Mar	The 26th Southeastern Analysis Meeting, Georgia Tech, Atlanta, March 25-28, 2010.
	Jan	The Joint AMS-MAA Meeting, San Francisco, January 13-16, 2010.
2009	Dec	The CMS Winter Meeting, University of Windsor, Windsor, Canada, December 5-7, 2009.
2008	Nov	The 8th Prairie Analysis Seminar, Kansas University, Lawrence, November 7-8, 2008.
	Aug	The 7th international conference on Function spaces, Differential Operators and Nonlinear Analysis, Helsinki, Finland, August 25-29, 2008.
	Aug	Workshop on Function spaces, Differential Operators and Nonlinear Analysis, Helsinki, Finland, August 22-24, 2008.
	Aug	The XI Romanian-Finnish seminar, Alba Iulia, Romania, August 14-19, 2008.
	May	Recent Advances in Geometric Function Theory, Syracuse University, Syracuse, May 19-21, 2008.
	May	Quasiconformal Mappings and Analysis on Metric Spaces, a conference in memory of Juha Heinonen; University of Michigan, Ann Arbor, May 12-16, 2008.
	Feb	Workshop on Harmonic Analysis, Fields Institute, Toronto, February 19-23, 2008.
	Jan	Workshop on Recent Advances in Operator Theory and Function Theory, Fields Institute, Toronto, January 7-11, 2008.
2007	Aug	Finland-Japan Joint Seminar on Analysis, Helsinki, Finland, August 27-29, 2007.
	Aug	Lars Ahlfors Centennial Celebration, Helsinki, Finland, August 20-24, 2007.
	Jun	The 6th Congress of Romanian Mathematicians, Bucharest, Romania, June 28-July 4, 2007.
	Jun	2007 Workshop/Summer School-Qualitative Properties of Solutions to Elliptic and Parabolic Equations, Saariselkä, Finland, June 7-10, 2007.
2006	Sep	Geometric Analysis and PDE, Naples, Italy, September 1-4, 2006.
	Jun	Analysis and Partial Differential Equations, Bedlewo, Poland, June 19-23, 2006.
2005	Aug	The X Romanian-Finnish Seminar, Cluj-Napoca, Romania, August 14-19, 2005.
	May	Ahlfors-Bers Colloquium, University of Michigan, Ann Arbor, May 19-22, 2005.
	May	International Conference on the Interplay of Complex Variables, Probability and Partial Differential Equations, Washington University in Saint Louis, May 11-14, 2005.

Papers and preprints:

1. *Strong A_∞-weights and scaling invariant Besov capacities*, Rev. Mat. Iberoamericana **23** (2007), no. 3, 1067-1114. DOI: 10.4171/RMI/524.

2. *Scaling invariant Sobolev-Lorentz capacity on $\mathbf{R}^n$*, Indiana Univ. Math. Journal **56** (2007), no. 6, 2641-2669. DOI: 10.1512/iumj/2007.56.3216.

3. *Conductor inequalities and criteria for Sobolev-Lorentz two-weight inequalities*, with Vladimir Maz'ya, Sobolev Spaces in Mathematics II. International Mathematical Series **9** (2009), p. 103-121, Springer, New York, DOI: 10.1007/978-0-387-85650-6, arXiv: 0804.3051 [math.AP].

4. *Besov capacity and Hausdorff measures in metric measure spaces*, Publ. Mat. **53** (2009), no. 1, 141-178. DOI: 10.5565/PUBLMAT-53109-07.

5. *Sobolev capacity and Hausdorff measures in metric measure spaces*, Ann. Acad. Sci. Fenn. Math. **34** (2009), no. 1, 179-194.

6. *Strong A-infinity weights and Sobolev capacities in metric measure spaces*, Houston J. Math. **35** (2009), no. 4, 1233-1249.

7. *BMO Estimates for the $H^\infty(\mathbb{B}_n)$ Corona Problem*, with Eric T. Sawyer and Brett D. Wick, J. Funct. Anal. **258** (2010), no. 11, 3818-3840. DOI: 10.1016/j.jfa.2009.12.015.

8. *The Corona Theorem for the Drury-Arveson Hardy space and other holomorphic Besov-Sobolev spaces on the unit ball in $\mathbb{C}^n$*, with Eric T. Sawyer and Brett D. Wick, Analysis and PDE **4** (2011), no. 4, 499-550. DOI: 10.2140/apde.2011.4.499.

9. *Newtonian Lorentz metric spaces*, with Michele Miranda Jr., Illinois J. Math. **56** (2012), no. 2, 579-616.

10. *Sobolev-Lorentz spaces in the Euclidean setting and counterexamples*, Nonlinear Analysis: Theory, Methods and Applications **152** (2017), 149-182. DOI: 10.1016/j.na.2017.01.001. arXiv: 1605.08551 [math.AP], http://cvgmt.sns.it/paper/3079/.

11. *Sobolev-Lorentz capacity and its regularity in the Euclidean setting*, Ann. Acad. Sci. Fenn. Math. **44** (2019), 537-568. DOI: 10.5186/aasfm.2019.4433. arXiv: 1707.08873 [math.AP], http://cvgmt.sns.it/paper/3532/.

Other papers:

1. *Minimizers for the Sobolev-Lorentz p, q-capacity in the Euclidean setting*, in preparation.

Books:

1. *Scaling Besov and Sobolev-Lorentz capacities in the Euclidean setting*, Publishing House of the Romanian Academy, Bucharest, 2012, xii+114 pages.

Teaching experience:

2013 –   **Instructor**, University of Pitesti. Instructor for Mathematical Analysis III, Complex Analysis and Statistical Data Interpretation in Biology and Medicine in the Fall 2013 semester; instructor for Mathematical Methods in Signal Processing and Techniques and Methods for Scholar Evaluation in the Spring 2014 semester; instructor for Mathematical Analysis, Mathematical Analysis III, Complex Analysis and Statistical Data Interpretation in Biology and Medicine in the Fall 2014 semester; instructor for Analytic and Computational Geometry in the Spring 2017 semester; instructor for Complex Analysis, History of Mathematics and Special Chapters of Mathematical Didactics in the Fall 2017 semester; instructor for Ecological Statistics and Mathematical Topics for the Optional Curriculum in the Spring 2018 semester; instructor for Complex Analysis, Mathematics with Applications in Biology, Modern Teaching-Assessment Techniques in the Fall 2018 semester; instructor for Mathematical Analysis II and Didactics of Arithmetics and Algebra in the Spring 2019 semester; instructor for Complex Analysis, Modern Teaching-Assessment Techniques and Special Chapters of Mathematical Didactics in the Fall 2019 semester; instructor for Mathematical Analysis II and Mathematical Topics for the Optional Curriculum in the Spring 2020 semester; instructor for Complex Analysis, Methodics of Teaching Real Analysis, Methodics of Teaching Mathematical Analysis in the Fall 2020 semester; instructor for Mathematical Analysis II and Didactics of Arithmetics and Algebra in the Spring 2021 semester; instructor for Complex Analysis and Special Chapters of Mathematical Didactics in the Fall 2021 semester; instructor for Mathematical Analysis II and Mathematical Topics for the Optional Curriculum in the Spring 2022 semester.

2010 – 2012   **Assistant**, École Polytechnique Fédérale de Lausanne (3 semesters). Instructor, coordinator, and supervisor over a group of tutors for Analysis I in the Autumn 2010 and for Analysis II in the Spring 2011 semester; principal assistant and coordinator over a group of assistants for Geometry in the Spring 2012 semester.

2009 – 2010   **Instructor**, McMaster University (4 semesters). Instructor for Math 3FF3 (Partial Differential Equations I) in the Winter 2009 semester, for Math 2A03 (Calculus III) in the Spring/Summer 2009 and Fall 2009 semester, and for Math 742 (Applied Mathematics II) in the Winter 2010 semester.

2001 – 2005   **Graduate Student Instructor**, University of Michigan, Fall 2001 - Winter 2003, Winter 2004, Fall 2004, Spring 2005 and Fall 2005 (8 semesters). Primary instructor for one section of a multi-section course: Math 105 (Pre-Calculus), Math 115 (Calculus I) and Math 116 (Calculus II).

1999 – 2001   **Graduate Teaching Associate**, Ohio State University, Fall 1999 - Spring 2001 (7 quarters). Held recitation sections for Math 151 (Calculus I) and Math 152 (Calculus II) for each quarter except the Summer 2000 quarter. Taught an individual section of Math 152 (Calculus II) in the Summer 2000 quarter.

1999 – 2001   **Training.** Attended training courses for teaching associates at the Ohio State University (one quarter) and at the University of Michigan (one week).

1998 – 1999   **Teaching Assistant**, West University of Timisoara, Winter 1998 - Winter 1999 (3 semesters). Held recitation sessions for Numerical Analysis.